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OF THE

SOCIETY OF ARTS

AND

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Chicago Exhibition, 1893.

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No. 2,088. VOL. XLI.

FRIDAY, NOVEMBER 25, 1892.

All communications for the Society should be addressed to the Secretary, John-street, Adelphi, London, W.C.

Notices.

CANTOR LECTURES.

On Monday evening, 21st inst., Professor VIVIAN LEWES delivered the first lecture of his course on the "Generation of Light from Coal Gas."

The lectures will be printed in the *Journal* during the Christmas recess.

Chicago Exhibition, 1893.

ELECTRICITY COMMITTEE.

A meeting of the Committee on Electricity was held on Friday, 17th inst. Present: Professor W. E. Ayrton, F.R.S., in the chair; R. E. B. Crompton, Professor D. E. Hughes, F.R.S., James Paxman, W. H. Preece, F.R.S., Mark Robinson, Alexander Siemens, Silvanus P. Thompson, F.R.S., Major-General Webber, C.B., with Sir Henry Trueman Wood, M.A., Secretary to the Royal Commission.

Proceedings of the Society.

SECOND ORDINARY MEETING.

Wednesday, November 23, 1892; GEORGE VIVIAN POORE, M.D., F.R.C.P., in the chair.

The following candidates were proposed for election as members of the Society:—

Barlow, H. Dudley, care of Messrs. J. and P. Coats and Co., Paisley, N.B.

Benson, Walter, Stoneleigh, St. George's-avenue, Weybridge, Surrey.

Edwards, Stanley, 24, Fenchurch-street, E.C., and Kidbrook-lodge, Blackheath, S.E.

Parker, Hon. Cecil Thomas, The Paddocks, Eccleston, Chester.

Thompson, Bernard H., Royal Engineers'-office, Windsor.

White, William, 58, Broad-street, E.C.

Young, Robert G., The County Asylum, Colney-hatch, N.

The paper read was—

CREMATION AS AN INCENTIVE TO CRIME.

BY F. SEYMOUR HADEN, F.R.C.S.

The object of the present paper is:—

I. To contrast burial as it is with burial as it ought to be; and, again, burial as it ought to be, with cremation as a proposed substitute for it.

II. To test the validity of a statement made by Sir Henry Thompson at the late Congress of Hygiene and Demography, to the effect that "Burial, by spreading infection, is a cause of increase in the zymotic death-rate."

III. To prove that, as the practice of cremation would render the clearing up of any doubts which might subsequently arise as to the cause of death in any given case impossible, such a practice cannot fail to operate as a direct incentive to crime, especially to murder by poisons known by the criminal to be difficult of detection without prolonged, and possibly repeated, methods of investigation.

Before attempting to deal with these several propositions, I cannot do otherwise than refer with regret to two or three circumstances which, though insufficient to turn me from the task I have undertaken, are yet of a nature to render that task anything but an easy one. It is not easy, for instance, to deal single-handed with any movement which has acquired the dimensions and character of an agitation; with a portion of the Press, which has so far identified itself with that movement as to publish unwillingly, and frequently to suppress altogether, anything which tells seriously against it; with a sanitary authority which persists on issuing instructions, not for the resolution, but the preservation of the bodies of the dead. An agitation, again, is not always exactly scrupulous as to the methods it employs, and the Cremation Society, by heading its appeals "Cremation *v.* Burial," instead of "Cremation *v.* the Abuses of Burial," is no exception to this.

Again, though I refer to it with the greatest reluctance, no adequate idea can be had of the difficulties of the question with which I have undertaken to cope without some pre-

vious insight into the composition and character of the recent meeting of so-called Hygiene and Demography, because the present paper is the immediate outcome of that meeting. Composed as that meeting was of ladies ready to hold up their hands for whatever was most advanced, and of equally advanced cremationists in about equal portions—inordinately long papers were read at it, which largely transgressed the 15 minutes allowed for them, and which took up so much of the available time of the meeting as to leave exactly three minutes, and no more, for the defence of the more regular papers, of which due notice had been given, and which strictly conformed to the rules laid down for the guidance of their authors. No wonder that, when a resolution was proposed favourable to cremation at a meeting worn out by the reading of these long papers, no hands were found to vote against it; and that this same resolution should have been since paraded in all directions, and on every occasion, as a deliberate expression of European opinion. I say no more of it. On the other hand, if I had said one word less, I could have given you no idea of the uphill battle which it has devolved upon me either to abandon or to fight. Having premised, and, I repeat, most unwillingly premised, this much, I now proceed to the consideration of the propositions which stand at the head of this paper.

First, then, as to burial as it is. Burial as it consists in this—in the hermetic enclosure of the dead body, which, instead of being buried at once, has been kept in the house till putrefaction has set in, in a strong air-tight box or coffin (of oak it may be, or even of lead), and in disposing of these boxes one upon another till a legalised piece of ground called a cemetery is full of them; then, in doing the same thing in another piece of ground till that also is full; then in a third till that is full; and so on, in one piece after another, till all are full—till the dead, in fact, are in permanent possession of all of them, or, as Lord Stowell pithily puts it, “till the dead have shouldered out the living.” I have already said so much of this mode of burial that I need here say no more of it.

Burial as it ought to be, again, consists in the enclosure of the body as soon after death as possible (as soon, that is to say, as the *rigor mortis*, which is a proof of death, has passed off and before decomposition has begun) in a coffin as perishable as itself, and which allows of its gradual disappearance

without harm to anything or anybody. For this method, or, rather, for this *principle*, of burial, I am myself entirely responsible, and if this principle were well understood, as I have described it elsewhere, I need not again refer to it. It is, however, even now, so much a sealed book to many, and possibly to many here, that I may, perhaps, be forgiven if I once more repeat what I said of it at a meeting presided over by Lord Shaftesbury many years ago:—

“It is the departure from the simple conditions which should attend the solemn act of committing a body to the earth which is the cause of all the evils that surround the subject, and which it is the aim of all I have written on the subject to mitigate, if not altogether to remove. The retention in a dwelling-house for as *long* as possible of a body, which ought to be committed to the earth as *soon* as possible, is the first departure of this kind. It is also the most important, because it is this departure which necessitates the strong coffin, and it is the strong, imperishable coffin again, which prevents the resolution which it is the beneficent office of the earth to accomplish, and which, therefore, it should be the first care of the living to promote. Some curiously mistaken notions exist as to what happens to a dead body when, in the words of the old ritual, it is ‘laid into the ground,’ the popular notion being that it becomes a part of that clay to which it is committed. Nothing of the kind, of course, is the case. A body properly buried—buried, that is to say, in such a way that the earth may have access to it—does not even remain in the earth, but returns to the atmosphere. Let me explain. Suppose a body buried three or four feet below the surface, the earth, as earth, affects it in no way whatever. The part played by the earth in its resolution is that of a mere porous medium between it and the air which is above it. Through this medium the air with its dews and its rain filters, and, when it reaches the body, oxidizes it, that is to say, resolves it into new and harmless products; and then these new products, passing upwards again through the same sieve-like medium, re-enter the atmosphere and become the elements of its renewal, and of the nourishment and growth of plants. The body, in fact, literally as well as figuratively, ascends from the dead, and fulfils the cycle of its pilgrimage by becoming again the source and renewal of life. . . . yet it is this very provision which, with our strong imperishable coffins, we are doing our best to prevent! Another mistake, too, is to suppose that, after a time, this coffin itself decays in the earth. It does not. Substances only which contain nitrogen readily decay in the earth, decay being the effort of the nitrogen to get out. But wood is a non-nitrogenous body, and does not readily decay; so that, in the Holborn Burial-ground, the coffins of Charles II.’s time were found just as they were buried, and with their contents

just as putrid, while the surface had been raised no less than eighteen feet by this mass of boxed-up putridity. . . . The coffin, therefore, should be of the lightest material, such as pulp, now in daily use at Woking. Moreover, as the coffin is the *font et origo mali*, it should be the first object to remodel and reform."

I hand round a representation of one of these coffins, that those present may see not only what it is like, but that I do not, as a prominent member of the Cremation Society is fond of declaring, "bury in a basket." I may also state that as the patent for this coffin is out, anyone may make it, and—as its prime cost is small—sell it for much less than the Woking Company is now doing. Before I entirely quit this subject of "burial as it ought to be," however, I cannot forbear to express my gratification that authorities so eminent as Drs. Brouardel, Du Mesnil, and Ogier, of Paris, have since fully endorsed the principle on which it rests, especially as to the action of the air as well as the earth in promoting the resolution of the buried body. I append a note of their observations to this paper:—

On the Sanitation of Cemeteries.

1. If—say Messrs. Brouardel, du Mesnil, and Ogier*—when interments took place in churches, it was possible for accidents to result from the escape of putrefactive gases—in these days, when such gases are allowed to find their way into the open air, such dangers are imaginary; while the air of the open cemetery itself is absolutely free from all danger and odour, as the result of its admixture with such gaseous products.

2. That this soil contains large quantities of carbonic acid gas only, and of other gases—contrary to the general belief—none in any appreciable quantities.

3. That the decomposition of dead bodies buried in the earth is rapid, exactly in proportion as the soil is porous.

4. That in proportion as the buried body comes into contact with the outer air, by the fact of the permeability of the soil, and of the porosity of the coffin, its resolution is the more rapid and complete.

I now proceed to describe, as fairly as I can, what I understand by cremation. There are, however, I ought to say, two ways of describing it—the cremationist way and my way. The cremationist way—I quote from a letter I have just received from a very eminent cremationist—is this:—"Efficient cremation and efficient burial are the same processes differing only in time. I would

recognise both (notwithstanding a case of poisoning here and there), though at the same time inefficiency in the performance of either should be made an offence." Then comes my way. I say that if these two things are the same in theory they are not the same in practice. That while burial is a complete process leaving no *residuum* behind it, cremation is an incomplete process, leaving a very positive *residuum* behind it, not to say a very embarrassing *residuum*. That while one, therefore, is an efficient and perfect process, the other is an inefficient and imperfect one, and, therefore, as my distinguished friend says, it ought to be "made an offence." That while, by burial, the body remains at rest till such time as its perishable parts re-enter the air, and its imperishable parts remain to form (as nature intended) an integrate part of the earth's substance—by cremation it is thrust into a furnace and, by the aid of one of those tall chimneys which we have been so long trying to get rid of, its combustible parts are poured—and that for two or three hours—into the pure air around, and its incombustible part (weighing from five to seven pounds, more or less), are returned to the mourners to take away with them! or "to be called for." What the effect on the surrounding air would be if a dozen, or twenty, or fifty, of such vomitoria were all at work at the same time, I leave to those whose fate it might be to live within half-a-dozen miles of them, to imagine. I might, if I thought it worth while, write a whole chapter on this part of the subject alone. I forbear out of regard to those present to do so, and to satisfy those who would know more of the wonderful properties both of the earth and of the air, content myself with recommending for their perusal the many instructive papers on the subject by our distinguished Chairman, and also a recent most remarkable paper on "The Nitrifying Ferments of the Soil,"* by Mr. J. M. H. Munro—a paper which ought to be all the more convincing in that it is not advanced by its author to uphold any preconceived theory. In that paper Mr. Munro tells us not only that nitrification (which is nature's way of turning all putrescent matter to a harmless and useful account) is impossible without the intervention of the earth, but that inoculation with even minute quantities of soil is sufficient to produce it. "The quantity," indeed, "of this most impor-

* Congress of Hygiene and Demography. London, 1891.

* "Journal of the Royal Agricultural Society." Third series, vol 2, p. 702 (1891).

tant factor," he says, "present at any one time in relation to the whole mass of soil, is so nearly infinitesimal that the most scientific chemical test will barely detect it." Sometimes, he goes on to say, "there is less than one part—often less than ten—of this nitrifying element in a million parts by weight of soil." If I have gone out of my way to quote what is said in this most interesting paper, it is because it comes to me as a revelation of that wonderful power on the part of a thin covering of earth to prevent any appreciable odour from the presence immediately beneath its surface of a dead body, at which I have always wondered; and because it furnishes a complete answer to those indiscreet and untruthful advocates of cremation who are always telling us of the pestilential vapours emitted by grave-yards.

II. To test the validity of a statement made by Sir H. Thompson at the recent Congress of Hygiene and Demography to the effect that Burial is a propagator of infection and a cause of increase in the zymotic death-rate.

In entering as seriously as I can upon this, the second head of this inquiry, I find myself, if I may say so, suddenly called upon to contrast what I have always believed to be the ways of Nature with the ways, opinions, and statements of Sir H. Thompson. If, as I must confess has been the case, I have hitherto believed the ways of Nature to have been for the general benefit, I must now, perforce, believe that they have been to our detriment. While Nature, up to now, has assured me that the great and universal disintegrator and destroyer of all forms of death and decay is the earth, Sir H. Thompson tells me that, in giving me any such assurance, Nature has deceived me altogether. On the contrary, that the earth is a very hot-bed of infection, and its water springs special carriers of that infection to the living. In a word, that while Nature has been doing one thing for the supposed welfare of the whole human race, Sir H. Thompson, for the purposes of the crematist propaganda, has been doing another. All that our chairman and Mr. Munro have told us of the wonderful nitrifying power of the earth on every form of animal decay—all that Sir John Simon and other eminent chemists have told us of its equally wonderful faculty of changing putrescent animal matter contained in water into neutral salts—all that we know of the complete cessation of [cattle plague by the prompt burial of its thousands of carcasses in

shallow trenches—of the harmless resolution of hundreds of soldiers superficially buried on fields of battle—nay, even of the entire disappearance of the Great Plague itself after its victims had been cast by cartloads into pits dug for them in the open streets—all this, I say, and all that we observe every day in our fields and gardens, we must now be prepared to give up and, at the novel dictation of the cremationist propaganda, to forget and throw to the winds! If those who now listen to me, and who may not unnaturally suppose that these expressions convey something more than the circumstances warrant, I can only say that their surprise cannot equal my own, when I heard for the first time from Sir H. Thompson's own lips that "burial within the earth was a propagator of infection and a cause of increase in the zymotic death-rate."

Now, there are three ways of meeting this extraordinary statement—by the evidence of experts, by the teachings of bacteriology, and by the result of experience—each I might almost say sufficient in itself to refute it. I, however, at once made up my mind to avail myself, for this purpose, of all three, and also that I would depend by choice on my own experience of forty years first. Every member of the profession, of which I have so long had the honour of forming a part, knows that all infectious diseases divide themselves into two great groups or classes—one which derives its origin from surface soil and surface water—the other which owes its convection to actual contact of one case with another in the open air. Again, that the first of these classes is itself sub-divisible into two distinct types of disease—one which depends on vegetable exhalations from marsh lands, and which includes within it all those forms of febrile disturbance known as malarial; the other which, like cholera and choleraic diarrhœa, depend on the actual introduction into the intestinal canal by means of surface soil and surface water of the *dejecta* of other patients affected with the same disease. Burial, therefore, four feet below the soil, can have nothing whatever to do with any of those forms which constitute, as I have said, the first class of infectious disease. The second, and by far the larger class, again, and which comprises small-pox, measles, whooping-cough, typhus, and scarlet fever, owes its propagating power to the actual contact or close contiguity in the open air of one patient with another. That class, therefore, has no connection with either soil or water, and being wholly independent of

even the surface of the earth, can have even less to do with burial than the first class. To lump these two classes together, therefore, as Sir H. Thompson has done, is, to begin with, a scientific solecism of the most glaring kind, and, seeing how perfectly well known the superficial method of their propagation is, to pretend that they are spread by means of water when buried four feet below the surface, a statement which is perfectly inexcusable and in the nature of a direct appeal (for a purpose) to popular ignorance and credulity. The zymotic death-rate, in fact, has nothing whatever to do with burial, only two out of the seven diseases which comprise it having ever been shown to depend in any way whatever, either on soil or water, and none of them, except in the imagination of Sir H. Thompson, to have been disseminated by water. Where, I would ask him, is the water to do it? Water, except in the shape of rain, is never found at, or near, the surface of the ground, or within many feet of it. As we pass the excavations made for the foundations of a house, which excavation is much deeper than the bottom of the deepest grave, we see no water; or even in larger and deeper excavations made for the building of a church or a theatre; or for the laying of pipes, or even in deep railway cuttings. The cut edges of all these excavations and cuttings are, in fact, perfectly dry. Springs, again, come from a depth, and arrive at the surface by isolated channels of their own. Is not this story of the water, therefore, an afterthought, a pure invention, in fact, to tack on to, and account for, the statement that the buried body is a propagation of infection.

Bacteria, again, which are said to "swarm" (as if they were animals) in the earth and to "prey" on the buried body are minute cellular organisms, which multiply by fissure, and, like all other plants (including mosses and fungi), grow best when undisturbed. Like plants, also, they require for their growth carbon and nitrogen; water, also, and a certain temperature are necessary for the maintenance of their vitality. Like plants, also, by the disintegration of organic combinations containing nitrogen, they produce certain chemical products and, as fungi, assist fermentation. They vary, too, as to the amount of atmospheric air they require, some of them, like the bacteria of *anthrax*, being unable to maintain their vitality without it, and some being able to do with little (the so-called aerobic and anaërobic bacteria of Pasteur).

That any of them, however, are able to do altogether without air I do not believe, and, therefore, humbly decline to admit these terms as warrantable. Like other plants, again, some are reproduced by spores, or seeds. When, by a linear arrangement of their primitive cells, they grow like rods, bacteria are called bacilli. Anthrax is a bacillus of this kind, and being, like *bacillus septicus*, what is (improperly) called anaërobic, dwindles and dies when deprived of air. If, therefore, the body of an animal which has died of anthrax is buried entire, *i.e.*, without being opened, the bacilli which characterise this form of disease die with it, and, notwithstanding statements to the contrary, not only die with it, but are incapable of reproduction. The infection of anthrax cannot, in fact, as cremationists declare, be spread when so buried. When, therefore, it has been reproduced in fields in which cattle infected with the disease have grazed, died, and been buried, the fresh outbreak is owing, not to the buried carcass, but to the spores which have been left by the *dejecta* of the infected animals upon the surface of the field in question. Both Klein and Koch are fully agreed as to all this, and Koch, in addition, has proved by direct experiment (Mittheil, a, d, k, "Gesundheitsamte," 1881) that the spores of anthrax are not, as Pasteur has stated, taken up by earthworms and deposited on the surface by their castings; and that the spores of anthrax bacilli, when mixed with earth in which worms are present, are not taken up by these creatures at all. Klein, indeed, carries these statistics further, and says: "If bacilli grow in the depths of a fluid medium—in a medium, *i.e.*, but scantily supplied with air—they do not form spores, and at length degenerate, and as the fluid dries up, this degeneration goes on till, finally, nothing is left of them but their *débris*. Such bacilli, of course, therefore, are quite innocuous when introduced into the tissues of animals, or into fresh nourishing media." (Klein, "Micro-organisms and Disease," ch. xi. pp. 155, 156. Macmillan, 1886.) Those, therefore, who have been able to follow me in this statement—a statement examined, re-examined, and confirmed by the most eminent men to whom I have submitted it (and, as I now understand to be admitted by Pasteur himself)—will see how little reliance can be placed on the reports spread broadcast over the country by the advocates of cremation, that bacteriology is fatal to the practice of burial, and, on the contrary, how

recommendatory it is of that practice, and how adverse to cremation. So much for the bacterial bugbear.

Lastly, and as my strongest point of all, I addressed to such medico-legal authorities as I thought best qualified to answer it, the following question:—"Do you, or do you not, agree with a statement made by Sir H. Thompson, at the Congress of Hygiene and Demography, that a human body, dead of an infectious disease and buried four feet below the surface of the ground, is capable, by water percolating the soil, or by any other known agency, of propagating the infection of that disease—or of any one of those diseases which are understood to comprehend the zymotic death-rate; has any case of infection so conveyed ever occurred to you, or come within your observation or knowledge; and, the present state of sanitary science considered, do you believe in the probability of such conveyance?" The answers to this question, though too variable in terms to be reproduced separately, I am justified in saying, amount to this:—"The statement you refer to is not consistent, either in part or in the whole, with the trained observation and experience of this country. Of the seven diseases known as zymotic—namely, small-pox, measles, scarlet fever, whooping cough, diphtheria, enteric fever, in various forms, cholera, and diarrhoea—the first five require for their propagation contact, more or less complete, in the air, and the last three the actual introduction into the alimentary canal (which is the seat of disease) of animal dejecta by surface soil or surface water. To include in one common category all these diseases as if they had a common origin is, to say the least, unscientific, and—the nitrifying power of the earth on water charged with animal matter considered—in the highest degree improbable, if not impossible. No known warrant exists, in fact, for any such statement. If, out of the hundreds and thousands of these diseases which have come under observation within the last twenty years, any one of them has proceeded from or depended upon, the neighbourhood of burial places in which such cases had received interment, all we can say is that the fact, if it has ever occurred, has been overlooked with singular uniformity by scientific observers."

I consider, therefore, I am now justified in putting to Sir H. Thompson the following questions:—

1st. When, where, and by whom has any outbreak of small-pox, measles, whooping cough, or typhus been shown to be due to water-borne infection?

2nd. When, where, and by whom has any water-borne epidemic, or any other specific disease been shown to be due to specific contamination from a burial-ground?

3rd. When, where, and by whom has any zymotic disease whatever been shown to be due to interment, when carried out four feet or even much less below the surface?

4th. When, where, or by whom has even increased general sickness, or increased general mortality, been shown to be caused by interment?

5th. What definite statistical evidence, in fact, is there to show (a) that the general death-rate, or (b) the zymotic death-rate, or (c) the death-rate from any group of diseases, or (d) the death-rate from any disease, zymotic or otherwise, has ever been affected by burial, even under the present objectionable conditions?

And if Sir H. Thompson cannot, or will not, answer these questions, will he correct the dictum current in Manchester and other cremationist centres, that it is now "a recognised principle that contagious diseases (*sic*) are so spread"—a statement which is going the round of the cremationist Press, and which is depended upon as a warrant for the erection of crematories in Manchester, Liverpool, Bristol, Darlington, &c.; and, further, is he aware that the inducement openly held out to would-be shareholders in those ventures is in no respect a sanitary object, but the dividends which their promoters declare they cannot fail to yield? I very much doubt whether Sir H. Thompson will find it convenient to answer these questions. If he will not, I call upon him, at all events, to furnish the provincial Press with such a correction of Mr. Chancellor Christie's statement at Manchester as will, at least, go to prove that cremation is a hygienic, and not a speculative, movement.

IV.—CREMATION AN INCENTIVE TO CRIME.

I now, and I trust for the last time, come to that part of the subject which no cremationist, if he can help it, is willing to hear mentioned—which the newspapers engaged in the cremationist propaganda are careful not to discuss—and which, whatever the momentary success which may attend, or appear to attend, the agitation of the question, will assuredly,

sooner or later, provoke the repressive action of the law.

With this part I may at once explain I have done precisely as I did when dealing with the sanitary part of the subject—put myself, that is to say, into personal communication with those members of the medical profession who, better instructed than myself, have had to cope with such cases in the courts of law, and whose experience is to be found in a concentrated form in the text-books on medical jurisprudence.

Taking note of Sir H. Thompson's statement to begin with, that "only 102 exhumations had been made during the last twenty years and only one murder a year been discovered by them," I first applied to the proper official quarter for the record of such cases, and learnt, not only that no such return had ever been made, or was likely to be made, but that inasmuch as such return, if made, would not include the exhumations ordered by coroners, it would not be accurate.

From Dr. Thomas Stevenson, again, the eminent Government analyst and editor of Taylor's great work on medical jurisprudence, I learnt that, "though he could not recall without great labour, all the cases he had met with, he had, yet, not only discovered poison by their exhumation, but had been able, by such exhumation and analysis, to prove the innocence of suspected persons."

From Mr. Thomas Bond, consulting analyst to the Westminster Hospital, I learnt that though, like Dr. Stevenson, he could not furnish particulars of every case he had had to do with years ago, he had yet had no less than four such cases in the course of last year (1891), all of them proving, by exhumation of the body, murder by arsenic; that this year (1892) he had made two such exhumations, which proved to him that a double murder had been committed—a man, in one of them, having been shot from behind at a distance of six feet or thereabouts, and a woman, also in the back, at a distance of one foot, a coroner's jury, however, having found the wounds in both cases accidental, and the result of a struggle between the two. That, on another occasion, he had exhumed a body after two months' burial, and found that death had resulted from the performance of an internal illegal operation, and that he had had a similar case since. That, in the case of Harriet Lane, murdered by Wainwright, after twelve months' burial, and though an attempt had been made to

destroy the body by quicklime, he had proved murder by a bullet wound in the brain. That in the case of the Austrian, De Tourville, who killed his wife on the Stelvio, the case brought home to him had turned out, by exhumation of the bodies, to be only one of several, one of the victims being his first wife's mother, whose death, after twelve years' burial, was shown to have been caused, not, as was certified, by an accidental wound in the eye, but by a shot from behind. Mr. Bond, too, ends his letter with this pertinent reflection, that "he had no doubt that many persons skilled in the use of poisons would more frequently resort to them if it were not for the knowledge that their operations were liable to be handicapped by exhumation."

Mr. Lowndes, again, the well-known surgeon of the Liverpool police, reports in the *Times* an equally instructive case. In this case two women, Higgins and Flannigan, had combined to murder, and did murder, by means of arsenic, a man of the name of Higgins, the husband of one of them, the crime being discovered by a *post-mortem* examination of the body before its burial; and that this murder had brought to light, by exhumation, no less than ten others by the same women, at the examination of three of which he (Mr. Lowndes) had himself assisted, the cause of death in all of them having been certified to have arisen from poison. Yet, that as the case of the man Higgins was complete in itself, and the exhumation of the ten others had been merely "corroborative, not essential," to the discovery of that case, therefore, they ought not to be counted, and need not, in his (Mr. Lowndes's) opinion, stand in the way of a fair trial to do without exhumation!

Quitting, however, these cases, the result of current experience, and going for further information to the text-books which positively bristle with them, we find in them abundant evidence of how fatal it would be to the ends of justice to do away with exhumation and to rely on certificates merely. I need only refer here to a few of them. A man of the name of Winslow poisons his mistress by antimony; three other of his relatives are exhumed in consequence, and all of them are proved to have been put an end to by the same poison, notwithstanding which, and for some reason, satisfactory, possibly, to a cremationist, the man was acquitted. At Bilston, three children die in one family, antimony being found in the bodies

of two of them, and, two months' afterwards (by exhumation), in the body of a third, the cause of death, in the last case, having been certified as "asthenia and gastric fever." Mary Ann Cotton, again, poisons her stepson, whose body, being exhumed, is found full of arsenic; whereupon, further exhumations bring to light the cases of no less than 19 other persons, all of whom had been murdered by arsenic, viz., those of her mother, 15 children, three husbands, and a lodger, making up the ghastly roll of 20 in all. The case, however, most to the point for the purposes of such a paper as this, because of the extraordinary opinions it elicited as to the "cause of death," is undoubtedly that of William Palmer, executed at Rugeley for the murder of J. P. Cook, because, in that case, the murderer would, undoubtedly, have got off but for the exhumation of six others of his victims, all of whom were found to have been murdered by him with the same motive, though not always (he being an expert) by the same means. I lay peculiar stress on this case, because it furnishes a complete answer to those who, like Sir H. Thompson, Mr. Lowndes, and others, seem to think that, with a better system of certification, we may safely do without exhumation. Alas, medicine is not, and never will be, the exact science which such reasoning supposes, and, under no conceivable circumstances, shall we be able, without such ocular demonstration as exhumation affords, to say—with anything like certainty—that such and such symptoms as are compatible with death from natural causes are not also compatible with death by poison. Palmer, for instance, poisons Cook by a mixture of strychnine and antimony. The strychnine kills, and the poison is removed by the vomiting purposely (?) set up by the antimony. At all events, neither poison is found in the unburied body in sufficient quantity to warrant a conviction for murder. Moreover, the action of both these drugs is so consistent with the symptoms of certain forms of disease, that no two medical witnesses, dealing with that case alone, could be found to say with certainty to which category they belonged. "Bilious cholera," "epilepsy with tetanic convulsions," and "angina pectoris" were each, in fact, certified by eminent practitioners as the cause of death, one of these gentlemen going so far as to write a pamphlet to show that the others were wrong! Now what, I ask, would have been the result in this most instructive case if

it had not been for exhumation. First, while the case of Cook is under examination, the body of Ann Palmer, Palmer's wife, after fifteen months' burial, is taken up, and murder by antimony discovered, "bilious cholera" having been certified as the cause of her death. Two medical certificates had also been given to the same effect, which, says Taylor, in narrating the case, "coupled with the social and professional position of the murderer, checked all suspicion." Walter Palmer, again, on whose life his brother had effected insurances to the extent of £82,000, was poisoned by him with prussic acid, and it was on the strength of their discoveries that the body of Cook, being exhumed, was again examined, and then it presented all those appearances which are now known to depend on poisoning by strychnine—the toes and hands being still flexed, and the limbs rigid. These, with others, nine in all, if not more, would, but for exhumation, never have come to light; nor would Palmer himself have been convicted. And again, may not exactly the same thing be said, notwithstanding an extraordinary amount of special pleading in the *Times* by Sir H. Thompson, of the case of Neill and his four victims? If, instead of being available for exhumation, the bodies of these four poor creatures had been cremated, where would Neill be now, and what would he be doing? True, in his last letter to the *Times*, Sir H. Thompson "hopes" to be able to "devise" a death certificate which may be depended upon as a safe warrant for cremation. He may hope, but if he will read, not our English books (for we are terribly behind-hand on the whole subject), but the French and German standard works which deal with it—"Briand et Chaudé" in particular, and the several able contributions to the same end by Brouardel—he will see how vain (without proceedings which the amateurs of cremation would never hear of) that hope would be. Nay, he would also find this—that however advanced on all such matters both these continental nations are, no such certainty has ever been arrived at even by them.

I did, indeed, after one of these confident letters of Sir H. Thompson to the *Times*, write to that journal, and point out how constantly a second and even a third examination was found necessary to correct the errors of a first. The editor, however, did not put it in, confident, no doubt, that it was only a piece of captiousness on my part, and little knowing that the very existence and future legality

of cremation depends upon the possibility of these secondary examinations. The suggestions of Dr. Brouardel on this part of the question are, in fact, invaluable, and sufficient in themselves to set at rest the ignorant pretensions of the Cremation Society for ever. I have by me, and been able to bring with me to-night only, a short report by this eminent *expert* to the French Government on this very matter. It is enough, however, to satisfy anyone of the absolute necessity not of one but of several *post-mortem* examinations of the same case before the death certificate could be arrived at; yet, so loosely are we forming our opinions on this all important fact, that when I wrote to the Editor of the *Times* to tell him so, he put—or at least I presume he put—for it has never appeared—my letter into the rubbish basket! Well, I am quite content to wait. Meanwhile, another proof of our imperfect understanding of the seriousness of a subject which we thus dispose of so easily is to be found in the common belief that it is only in cases of poisoning that we need apprehend any difficulty in making out a satisfactory death certificate. Alas! as Dr. Brouardel shows, poisoning, though in these days of vegetable alkaloids a difficult crime to be sure of, is by no means the only crime to puzzle the medico-legal expert. I am not now speaking of cases in which death was the invariable result. I hold in my hand a return of cases of all forms of crime which this gentleman alone has been called upon to deal with in the course of six years—that is to say, between the years 1878 and 1883, both years included. It will astonish those, I think, who heard Sir H. Thompson say at the Congress of Hygiene and Demography—(he has corrected it, I see, since)—that only one murder a year was discovered by examinations of this kind—examinations undertaken not only for the discovery of cases of poisoning, but of crime of all sorts. After quoting no less than 505 examinations undertaken by him in these six years of attempts on the life of adults alone—(cases of infanticide are, it appears, far too common in France to be even mentioned among them)—359 yielded results of a nature to lead to a conviction, while 146 were insufficient to do so; and this accords with Dr. Stevenson's experience when, in his letter to me, he says that while he had often been able to detect crime, he had also not seldom been able to prove the innocence of the suspected person. I must not take up the time of the meeting by going through the long list of

crimes of all kinds which Dr. Brouardel had to deal with; but it will, I am sure, surprise many who hear me, that poisoning formed but a small part of them—but thirty-nine, in fact, while in forty-two no poison was discoverable, and the natural death certified. I have, however, quoted enough to show the very onerous and responsible nature of the task which the Cremation Society is taking on itself so easily, a responsibility the degree of which the newspapers which support them can have no idea, and of which, it is equally clear, they have no idea themselves. Meanwhile, for the purposes of this paper, I am content to depend on the case of Palmer alone, as a case which, since it puzzled half-a-dozen medical men, would certainly have puzzled the all-sufficient expert—whoever he may be—depended upon by the Cremation Society!

V.—CONCLUSIONS.

I have now done, and the conclusions I have now arrived at—many of them I may say forced upon me—are as follows:—

1. That owing to the one-sided statements put forth by the Cremation Society, a very general impression has been created that there is only one kind of burial and only one remedy for it—cremation: a statement which is entirely misleading.

2. That this belief has been greatly assisted by the systematic suppression on the part of an influential portion of the Press of all effectual answers to the cremationists' statements, and, that in this way, the country has become flooded with these unopposed statements.

3. That the Government, as represented by the divided authority of the Home-office and the Local Government Board, is equally to blame for allowing the abuses I have pointed out to go on, and is, therefore, to that extent, responsible for the cremationist agitation.

4. That burial, as at present carried out in coffins which prevent the resolution of the body, is equally a reproach to the intelligence of the country and to the Government that permits such a practice.

5. That to make the practice of burial perfectly harmless, and to do away with all excuse for cremation, nothing more is necessary than to take this matter of the coffin out of the hands of the undertaker, and to make its structure and composition a matter of municipal regulation.

6. That while burial, properly conducted, is

a complete and perfect process, leaving no *residuum* behind it, cremation is an incomplete and imperfect process, leaving a considerable and very embarrassing *residuum* behind it—a *residuum* equal in bulk and weight to $\frac{1}{10}$ th part of the whole body, and for the disposal of which it makes no provision whatever.

7. That while the earth properly used is capable of disposing of any number of dead bodies, and of disposing of them silently and with advantage both to its own substance and to the air above it, the practice of cremation on a scale large enough to have even the slightest influence on burial either as a rite or as a custom, supposes the necessity not of one but of many furnaces with tall chimneys, the use of which in towns no municipal authority in its senses would for a moment permit; and which in the open country would cause such a consumption and carbonisation of pure air as to render (changes of wind considered) a large area in the neighbourhood of such chimneys uninhabitable.

8. That the natural destination, therefore, of all organised bodies that have lived and that die on the earth's surface is the earth.

9. That the evils supposed to be inseparable from the principle of interment are independent of that principle, and are of our own creation.

10. That the source of these evils is to be found, not in the burial of the dead, but in the unreasoning sentiment which prompts us to keep them unburied as long as possible, and then to bury them in such a way that the earth and the air can have no access to them.

11. That the principle of burial supposes the resolution of the body by the agency of the earth to which we commit it, and that the earth is competent to effect that resolution, and to effect it innocuously.

12. That to seek to prevent the beneficent agency of the earth by enclosing the dead in imperishable coffins, brick graves, and vaults, is in the highest degree irrational, since it engages us in a vain resistance to an inevitable dispensation, and has led us to accumulate in our midst a vast store of human remains in every stage and condition of decay.

13. That unwarned and undeterred by the magnitude of the evils we have thus created, we are still, by the instructions issued by our sanitary Boards, engaged in extending and perpetuating them.

14. That were the dead only properly buried, not one of those evils would have any existence,

not a single dead body would remain to encumber the soil, and a quantity of land of incalculable value, now hopelessly alienated, would be liberated for purposes of hygiene and of utility.

15. That the remedy for such evils is, therefore, not in cremation or in any of the alternatives that have been proposed for burial, but in a sensible recognition of, and a timely submission to, a well-defined law of nature, and, since some of these alternatives are dangerous, in legislative action to enforce the provisions of that law.

16. That Sir Henry Thompson's extraordinary statement that burial, however, conducted, is "a propagation of infection and a cause of increase in the zymotic death-rate," is absolutely without warrant, and abundantly disproved by expert evidence from all parts of the country.

17. That water is not, as he has stated, a carrier of any one of the contagious diseases which comprehend the zymotic death-rate.

18. That bacteriology, so far from adverse to burial, is distinctly in favour of it.

19. That Sir H. Thompson's further statement made at the Congress of Hygiene and Demography, as to the number of exhumations made, and of murders discovered by them, is absolutely incorrect, unless he counts Palmer's six cases as one, De Trouville's seven as one, Higgins's and Flannigan's ten as one, Cotton's twenty as one, and so on.

DISCUSSION.

The CHAIRMAN was quite sure they had all listened with a great deal of pleasure to the very able paper read by Mr. Haden. The last part of his paper, to the effect that cremation did away with the possibility of exhumation, was self-evident, and, if cremation became general and exhumation became impossible, he confessed it was rather like taking down the notice "Beware of the dog," which kept felons and others out of their houses. The taking down of that little notice "Beware of the dog," (*i.e.*, the person who exhumed the body and found poison), might have very untoward consequences. But he had not hitherto looked upon this question—the inability to practice exhumation—as one of the great arguments against cremation. He was ready to yield the exhumation question to the cremationists, and yet he would still tell them that cremation was hopelessly in arrear of the science of the time, and that, from economic and sanitary reasons, it ought not to be recommended. With regard to the question of zymotic diseases, he confessed that zymotic

diseases may have originated from grave-yards. He admitted the possibility of it, but the facts were very scanty, and they certainly wanted confirmation. He was speaking that afternoon to a friend of his, a noted hygienist, and he was likewise of opinion that the facts against grave-yards were extremely scanty. Now there was no doubt whatever that cholera was conveyed by water.

Mr. SEYMOUR HADEN—Surface water.

The CHAIRMAN—Well, surface or river water and well-water, but how had that water been contaminated? The water which had conveyed cholera had always been contaminated by leakages from cesspools or sewers. The upper layers of the earth were full of bacteria—the nitrifying organisms described by Professor Munro. If, consequently, they buried organic matter in the upper layers of the earth, the nitrifying organisms would get hold of it, and the body, or excremental matter, would be turned into nitrates and nitrites. The soil itself was the most perfect filter for bacteria which was known, and if the organic matter be buried near the surface of the soil, the filtration of the bacteria into wells was impossible. A cesspool was another matter altogether. What was done here? Here was a pipe which perforated the upper layers of the soil and took the foul water into the cess-pit. The water collected in the cesspools, which, in consequence of the pressure, began to leak, and allowed the foul matter to percolate into adjoining wells. That was how accidents occurred, but there was no analogy whatever between foul water in a cesspool and a body buried in the upper layers of the earth. He absolutely and cordially agreed with what Mr. Haden had said—viz., that burial as a means of communicating zymotic diseases was a mere nothing, and that what had been proved against burial, even unscientific burial, was a mere nothing. Now, he should like to say that, if they were to compare cremation and burial, they must be very careful to separate essentials and non-essentials. The simple act of interment has, owing to superstition, vanity, and ignorance, become encumbered with a number of ceremonies which all felt to be exceedingly oppressive. He believed that the limited popularity, if he might say so, that cremation enjoyed was created by being able to avoid these very embarrassing and trying ceremonies. But these were not essentials either to burial or cremation. In cremation they put the body into a hole in a furnace, and in burial they put the body into a hole in the ground. If they were to compare the two acts, they must be compared simply like that, quite independently of other concomitants. In the case of death, it was absolutely essential to make preparation for the transport of the body, so that it might be decently placed in the hole; whether that hole be in the ground or in the furnace really could make no difference, except that earth burial

required no special machinery, and was infinitely quicker. The grave could be dug, the body put in, and the whole covered in again in ten minutes or a quarter of an hour. The next point was that if burial was to be perfected they must follow nature's law. Mr. Haden was quite right when he said that the destination of all dead organic matter was the earth from whence it came, and that to purify the earth you must grow something on it. It had been the wise custom to grow trees, shrubs, and flowers in the cemeteries in this country, and to make them look beautiful. The cremationists said that burial in the earth was too ghastly a subject for public discussion, but why he was at a loss to understand. From the æsthetic point of view all the advantage was on the side of burial. If the body was properly buried in the earth, all trace of it would disappear completely. The rain falling upon the earth dissolved out the nitrates, and carried fertilisation wherever it went. It must be admitted that it was their duty to return to the earth whatever came out of it. At present, in their great cities, all organic refuse was burnt or turned into the rivers. They swallowed the camel of poisoned rivers, and strained at the gnat of earth burial. If, in addition to that, they had cremation of the dead, the air would be rendered more foul, and the earth would be starved. Cremation was a destructive process, whilst inhumation was a productive process. If they put a body into the earth, it must bring forth. It might shock some people to hear a body spoken of as productive, but it could not help being productive. It would bring forth food for the starving, clothes for the naked, warmth for the shivering, and work for the unemployed. If they were going on as they were going, if they starved the earth, and if, as a matter of strict principle, they did not return organic matter to the earth, there could be no doubt whatever that such a line of policy would do for this country what a similar line of policy had done for the Campagna round the city of Rome. He should like just to say a word on the financial side of the question. If a burial ground be properly used, an acre of ground would provide space for 3,630 adult people. They were told that land was not to be got. He was sorry to say that land was never so cheap as at this moment. Land could be obtained at £20, or even £10 per acre, and any land suitable for agricultural purposes—anything except a stiff clay—was suitable for burial purposes. He had read in "Chambers's Encyclopædia" that the cost of fuel for cremating each body was 7s., so that it would require 1,210 guineas' worth of fuel for 3,630 persons. Therefore, on the economical ground, they might have to give 1,210 guineas an acre before cremation could compare in its financial aspects with burial. He bought the other day a small parcel of land, 66 miles from London and five minutes' drive from an important railway junction. It was farm land, and he gave 30 guineas an acre for it. It would make an excellent cemetery, and if 3,630

persons per acre were buried in it, the cost of interment for each person would be twopence. He was setting aside all extraneous matter, as, of course, they might have plumes, and feathers, and hearses, and all kinds of things. If, however, they made inhumation as simple as cremation, then on economic grounds burial was much better than cremation. But supposing that land was to become very dear indeed, inhumation scientifically conducted would enable the ground to be used over and over again. As to when the earth would be ready again after the ground was once full of graves he could not definitely say, but it certainly might be done after the lapse of a generation. He would not propose a shorter date. There was one other point. If inhumation was properly done, there was no reason why the burial ground should not be moderately close to a city. Burials conducted on scientific lines, so far from contaminating the air, tended to freshen it by causing to spring up trees and shrubs, the leaves of which gave off oxygen. On the other hand, cremation furnaces would give off the products of combustion, all of which would go to poison the atmosphere. He noticed that one person who now advocated cremation was very prominent in his efforts to reduce the smoke of London, and to open disused graveyards as playgrounds for children. This gentleman, by advocating cremation, would add to the evil he sought to diminish. He did not think it necessary to say anything further, except this, that burial, as compared with cremation, was simpler and cheaper; that it was a productive process, and not a destructive process; and that it freshened the air, and did not foul it.

Mr. J. C. SWINBURNE-HANHAM, Hon. Secretary of the Cremation Society of England, did not think that the chief object of the meeting that evening was to discuss the details of cremation, or even its sanitary aspect. They were present to discuss the question from a medico-legal standpoint—the reader of the paper asserting that cremation was an incentive to crime. The Chairman had, however, wandered from that point, and had even gone into figures to demonstrate the correctness of his assertions. Dr. Poore had given them his idea of the cost of scientifically conducted burials; but anyone connected with burial boards in large towns would know that land very frequently reached 1,210 guineas an acre, which was the sum the Chairman had estimated for the cost of fuel in cremating 3,630 persons. Then they had to consider the fact that more than an acre was bought, and that it cost something to dig and fill in a grave. As a means of testing the relative cost of cremation and burial, he should advise anyone in doubt to ascertain the cost of the humblest grave ever allotted to a pauper. He was not there to defend Sir Henry Thompson, or to deal with the question from a sanitary point of view. The sanitary side of cremation and burial had been discussed over and over again, and he believed it was not

denied that the present system of interment in and around towns was a source of danger to the population. That difficulty was met by the suggestion that the burial grounds should be in a locality some distance away, but then there had to be reckoned the cost of moving the body. Cremation was said to be an incentive to crime, because it precluded exhumation; but exhumation was not an effectual security against crime committed by poisoning. There were practically only three poisons, which were mineral ones—viz., arsenic, antimony, and mercury—which could be reckoned on as likely to be detected by exhumation, for distinct traces of vegetable poisons were sooner or later lost by decomposition. Decomposition of the tissue itself produced new poisons, which, associating with those that caused death, complicated the steps of subsequent inquiry. It was essential that evidence of crime, to be of use, must be unquestionable. Exhumations were of rare occurrence, being five per annum. Moreover, skilful poisoners would avoid using mineral poisons. The French case of De la Pommerais showed the inefficiency of exhumation, as it afforded no direct evidence of poisoning, and it was only by the analysis of vomit scraped from the floor that this was obtained. Evidence of crime should be obtained at once, and, where cause of death was doubtful, an examination should be made forthwith, while the traces were distinct. The practice of the Cremation Society of England was to require two independent medical certificates, stating clearly what was the cause of death, before they cremated a body. In doubtful cases a *post-mortem* was made. Not long ago a doubtful case came before the Society; an examination was made, and a portion of the stomach and viscera removed, and preserved in a sealed jar. This should be done before cremation in all doubtful cases, and if it was, would be a formidable deterrent to the secret poisoner. The Cremation Society of England did not deny the need for regulations controlling cremation, and urged the reform of the present system of granting death certificates on the model of the French system. If this obtained in England, the events connected with the death of the unfortunate Matilda Clover would have been made known directly it happened, and before she was buried. No system of death certificate could be infallible. They could only do their best to make it as perfect as possible, and, having done so, even should an occasional poisoner escape detection, when it was remembered how serious were the evils arising from burial in the earth, the balance of advantage was clearly on the side of cremation.

Mr. JOHN LEIGHTON did not consider it necessary in a suitable soil, such as at Woking, to do away with the ordinary coffin. Except in a stiff clay soil it would quickly resolve itself.

Mr. OLIVER WILLIAMS said he had read some of the publications of the Cremation Society, and he

could bear out the contention that the greatest possible care was taken as to medical certificates. He himself would prefer being cremated, and if he were a poisoner would rather run the risk of poison being found in the body after burial than at the strict examination preparatory to cremation.

Col. ALLAN CUNNINGHAM thought that burial two feet below the soil would affect the surface water feeding surface wells. Many of their large towns now obtained their water by surface drainage, though of course, as far as possible, they always took an unsuspecting locality. He did not think they would be justified at present in taking a drainage area within which were surface burial grounds; that was where the bodies were not more than five feet deep. It all came to this. If they put too many bodies on to one piece of land, the nitrifying power of the soil would be too much taxed. The general gist of the paper they had heard read was that there was proper and improper burial, and that proper burial was burial at shallow depths. There were many other processes of burial to be tried. The Hindoos burned their dead—that was, they did it theoretically. They used to burn them when fuel was cheap, but nowadays they used very little fuel, the body being thrown into the river and carried off that way. The Parsees exposed their dead on towers, so that the bodies might be eaten by vultures. That was one mode of getting rid of organic matter in a healthy way. The Mahomedans and Christians in India buried their bodies, but they saw in that one country three processes going on with respect to the disposal of the dead. All the evils resulting from burial resulted from burying too close and from burying in permanent material.

Mr. SEYMOUR HADEN, in reply, said he had been trying his very utmost to compose himself for the reply to Mr. Swinburne-Hanham. He had never in his life heard such confused statements upon any subject whatever, and he could not for the life of him gather anything out of them except the one statement that cremation was better than burial. Mr. Hanham did say one thing which struck him as very odd. He said that only five exhumations a year took place. Why four took place in a fortnight only a short time ago. These were furnished by the bodies of the four poor girls murdered by Neill. The French case alluded to was a case directly in favour of burial. The first certificate utterly and entirely failed, and nothing would have been discovered if, on a second examination, some vomit had not been found on the floor. In the case of cremation, no such examination would, in the first case, have been possible. Mr. Hanham had said that the evidence should and could be obtained directly. Even in France and Germany, where their system is far better than in this country, it has been found, by experience, that evidence could not be obtained directly, and, as he had said in his paper, a second, third, and even a fourth examination was sometimes necessary. Was

it to be imagined that any expert, however clever, was able to discover all things at once? Was it possible for the experts of the Cremation Society to say at once that they were right? What was there about this society which made it infallible? It was nonsense. Somebody had asked how long a body remained in the earth. That altogether depended upon the character and porosity of the soil, but it might be anything, from three to seven years. He recollected exhuming the body of a pony that had been buried in clay. He expected to find it entire, but, as a matter of fact, he found nothing but bones. The reason of that was, that the pony was superficially buried, and, the clay cracking with the heat, allowed the air to reach the body and oxidise it. He had never said that nothing remained in the soil. The bones remained in the soil, and they remained there for the purposes of the soil, but all the perishable part had dissolved into the atmosphere, and went to the nourishment of plants, as the Chairman had said. The earth had, in fact, been, since the world began, the recipient of a mass of dead matter, which was only equalled by the sum of animal and vegetable life growing on its surface. To return dead matter to the earth is but the necessary step to its revivification and reanimation. Throughout the globe death and decay go to the maintenance of life, to the purification of the atmosphere, and, in a word, to the reformation and establishment of the beauty and healthiness of the earth's whole surface. Every thing that ever lived upon the earth went back to the earth, a fact which admitted of no dispute.

The CHAIRMAN explained, that on the financial question he left out altogether the cost of the plant and the wages of the stokers, which would be a considerable item in the cost of cremation. With regard to the decay of organic matter, Professor Fowler, at a debate on the subject, said that he had had a whale sent him for preservation in the Hunterian Museum. He had had a great experience in the preparation of whales, so he had the carcase superficially buried in ground just outside a wood. At the end of two years, he found that all organic matter had gone, a beautiful skeleton alone remaining.

A vote of thanks to Mr. Haden concluded the proceedings.

Miscellaneous.

THE INDUSTRIES OF DAMASCUS.

There are a considerable number of important industries in Damascus, of which the principal is the weaving industry. Her Majesty's Consul at that place says that there are some 2,000 hand looms for cotton, silk, and wool weaving. The cotton



looms turn out calico curtains and divan covers, stockings, sheets, girdles, surcingle, the stuff used for the long coats (*gumbaz*) worn by Moslems, and for the *izars*, or cloaks which cover the native women from head to foot. A hand loom can turn out thirteen yards of striped cotton cloth per diem, but the average day's work does not exceed seven yards. Taking 250 working days in a year, as there are numerous holidays, the total output for 1,000 looms would amount to 1,750,000 yards per annum. The cotton looms are constantly at work, not so the wool and silk looms; but yet the manufacture of *cottoni* (which is a stuff made of silk and cotton for upholstery), of puggarees, curtains, tassels, *izars*, and handkerchiefs, all of silk or silk and cotton mixed, occupies a large proportion of the working classes. There is also a small amount of wool stuffs manufactured. Rope-making also gives employment to a large number of persons, as also ornamental harness and saddle-making. Harness for mules and camels is made of wool leather, and ornamented with beads and shells. There are also many dyeing establishments. These are principally engaged in dyeing cotton cloth with indigo, for the clothing of the poorer class, but there is also a considerable business done in fancy colours for curtains, *izars*, &c. Other industries are hammered iron work, copper work, ornamental brass work, and mother-of-pearl inlaid work. The two latter are chiefly supported by travellers, who pay exorbitant prices, and who have spread the taste for these articles in foreign countries, with the result that last year about £9,000 worth of brass trays and inlaid tables were exported.

Notes on Books.

THE STANFORD DICTIONARY OF ANGLICISED WORDS AND PHRASES. Edited for the Syndics of the University Press by C. A. M. Fennell, D.Litt., Cambridge. 1892. 4to.

Mr. J. F. Stanford, F.R.S., who had made large collections towards the compilation of a Dictionary of Anglicised Words and Phrases, bequeathed £5,000 to the University of Cambridge for the production of such a Dictionary. The University accepted the bequest in 1882, and the Syndics of the University Press appointed a committee, consisting of Professor Mayor, Professor Skeat, Professor Bensly, Mr. Aldis Wright, and Dr. Postgate, who prepared a scheme of such classes of words as were to be included in the Dictionary. Dr. Fennell was appointed editor.

The main objects of the work are thus stated in the introduction.

"*Firstly*, to enable the English reader to find out the meaning and history of the foreign words and phrases which occur so frequently in English

literature; *secondly*, to register the increase of the English vocabulary, directly due to the adoption and naturalisation of foreign words since the introduction of printing; *thirdly*, to record all English words of foreign origin which have retained or reverted to their native form More than 50 per cent. (*i.e.*, more than 6,400) of the articles of the Dictionary and Supplement are devoted to the first object which is popular."

The editor has had the greatest difficulty with the section that includes "all words borrowed from French, Latin, and Greek since the introduction of printing, whether now altered or but imperfectly naturalised, and now obsolete." From this class, all words found in Middle English were to be excluded, and, as there is no full register of such words except the "New English Dictionary" of Dr. Murray and Mr. Bradley, which has not at present proceeded far in the alphabet, the editor was in danger of including words which should properly have been excluded.

"The Dictionary" (including the Supplement) contains 12,798 articles (which treat of 13,018 words and phrases) and 2,708 cross references. The 12,798 articles are concerned with 10,927 words, 1,813 phrases, and 278 quotations, proverbs, or maxims.

An asterisk is prefixed to every article for which materials were found in Mr. Stanford's collections, which materials, in many cases, consist of a number of extracts from periodical literature and newspapers. An asterisk is also to be prefixed to all quotations taken from Mr. Stanford's collections.

A casual glance through its pages will show how large a proportion of the Dictionary is the work of the editor, both in words and illustrative quotations. As stated above, most of Mr. Stanford's quotations were taken from newspapers and other contemporary periodicals.

The large mass of quotations from old English literature are therefore almost entirely due to the editor and his staff of voluntary helpers. In fact Dr. Fennell has been so fortunate as to find in a few instances earlier references to the use of certain words than those given in the "New English Dictionary." The editor has not loaded his work with such native words as modern travellers and novelists are in the habit of introducing into their books with the object of giving "local colour," but which are not used by other writers and cannot be said to be anglicised.

As a rule the etymology has been confined to the indication of the language from which a word or phrase has been borrowed, and of its native form and meaning but in a few instances, where fresh light could be thrown upon a derivation, full etymological paragraphs have been added.

It is not easy in a short notice to give a clear idea of the contents of a Dictionary such as this, which has been compiled on novel lines. It may be said to consist of proper names which have come to be used as generic words, such as Nimrod; words formed from proper names, as dahlia; "geographical names,

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